different time, and here it is. And so I think maybe we will have some comments on this -- or some discussion about this. Issue number seven relates to a suggestion that organically bound tritium at Savannah River would produce a significantly higher dose than tritiated water (unintelligible) tritium, which is essentially the assumption in the dose calculation for Savannah River.

Our position, first of all -- well, there's -- there's another issue. Our -- this is -- this particular issue relates to a tritiated organic compound, and I think the most logical thing that comes to mind is a lubricating oil or something like that that would be contaminated. You would have a tritiated organic compound. It certainly seems from what we've seen is that the vast majority of the tritium at Savannah River was tritiated water, and that by using tritiated water as the basis for the dose calculation, particularly when you look at the way the doses are -- are done, I mean we generally don't do a -- a specific intake and a dose calculation. We'll say how high could the dose have been this year and not shown up on

the bioassay record, and that's what we're going to assign. We think that the approach we've taken of assuming tritiated water is the appropriate approach to take because of the -- the majority of the tritium at Savannah River was tritiated water. We -- we do make a comment that the -- the dose of -- the dose from organically bound tritium is only about twice of what it is from tritiated water rather than four times. I believe -- Hans, I believe, agrees with that.

But -- but despite that, we still believe that the approach we're taking is correct because of the preponderance of tritiated water versus organic form.

MR. FITZGERALD: Let me make a comment here. This is Joe Fitzgerald. We're in the midst of the Savannah River site profile review and this is obviously one of the areas that's being reviewed in a generic sense for the site review. And I'm not sure if it would not be a better idea to see how that characterization worked, that review of dose, and perhaps in that exchange deal with the more generic question of trying to characterize the -- you

know, how that's being addressed rather than trying to nail it here.

DR. H. BEHLING: We tried that -- this is Hans Behling. We tried to -- to come to that conclusion earlier on, but I think Mark wanted to at least bring it up --

MR. FITZGERALD: Well, the reason I'm raising it is because I know talking to Kathy DeMers, this is something that she's going through quite a bit of documentation right now and I know she wants to talk to you all about it and try to work this out, so I --

DR. H. BEHLING: You have no arguments with me. This is Hans Behling.

MR. FITZGERALD: This is what -- this is certainly a key characterization issue. I think it's a legitimate question. I think NIOSH has a very valid point and I think we're in the midst of trying to work this thing -- it's going to be within the next 30 to 60 days, so it's not like we're -- we're (unintelligible) most and -- and --

MR. GRIFFON: I -- I --

MR. FITZGERALD: Go ahead.

MR. GRIFFON: I -- I just wanted to

(unintelligible) issue. I think that part of this resolution might come through the site profile (unintelligible) --

MR. FITZGERALD: Yeah (unintelligible) --

MR. HINNEFELD: I think by -- you know, we agreed to -- Hans and I originally, off line, thought why don't we just defer it to the Technical Basis discussion because it'll come up there. It'll be discussed there. We said well, we want to have some discussion of the issue, at least frame the issue --

MR. FITZGERALD: Yeah, that's fine.

MR. HINNEFELD: -- and -- but with the perfect understanding that we're not going to resolve that here, and we -- and it's our intent to add that onto --

MR. FITZGERALD: Okay, well, that's fine.

MR. HINNEFELD: Yeah, that's fine, if that's acceptable to everybody.

MR. GRIFFON: (Unintelligible)

MR. HINNEFELD: (Unintelligible) that, I think, at Savannah River is probably relatively minor. Other facilities, metal (unintelligible), as I understand it, represent sort of a thorny issue and right now I don't know what I want to --

what I would say about that.

MR. GRIFFON: Well, you -- you -- I mean even af-- even after that, I'm sure you have a (unintelligible) you know --

THE COURT REPORTER: It's hard to hear you, Mark.

MR. GRIFFON: Sorry. Even at Savannah River I imagine you have a potential for some metal (unintelligible) just from the (unintelligible) equipment, rust and perhaps other things or -- you know, just like your organic from the oils, but I -- I -- I don't think, you know -- I think we would defer that also to the site profile review process, but --

MR. HINNEFELD: Well, that would be -- I think we're going to have to. I don't think we're going to ever resolve it here today --

MR. GRIFFON: Yeah, I agree (unintelligible) --

MR. HINNEFELD: -- (unintelligible) issues being pursued in that -- that arena. But you know, I'm all for that.

MR. FITZGERALD: And this discussion really is helpful. I think it's going to help --

THE COURT REPORTER: Who is this?

MR. FITZGERALD: -- when we discuss -- when we

get to --

THE COURT REPORTER: Who is this?

MR. FITZGERALD: Oh --

MR. HINNEFELD: That was Joe.

MR. FITZGERALD: Oh, I'm sorry. Yeah, this discussion will be very pertinent. It will lead into a lot of what we're doing already in the profile review so it -- it's certainly helpful, anyway.

DR. H. BEHLING: I think we can therefore conclude, based on what we stated here, that in the final draft of this 20-case review we're going to eliminate the discussion of tritium and the secondary issue of the ICRP-30 versus 60-whatever (unintelligible) and so we'll leave that to -- to task one and -- and they're being ignored for the time being. Is that reasonable to --

MR. HINNEFELD: I think that would be reasonable from our standpoint. I think if -- if -- if you want to mention that there is this issue that's being pursued in the Savannah River -- there is issue that is being pursued -- I mean the issue's being pursued in Savannah River, we say yeah, great, so say it, that's

fine by us. I think the key feature here is that there is no expectation to resolve it as part of their product. That would be my view. That's what I would hope to come to (unintelligible) looking at you guys.

MR. GIBSON: We can't speak for the Board, but --

MR. HINNEFELD: But -- okay, you're right.

MR. GRIFFON: Right.

MR. HINNEFELD: You're observing us, I'd forgotten, so --

MR. FITZGERALD: Well, I think -- yeah, this is Joe. I think there'll be more issues like this as we proceed forward where the dose reconstruction reviews will overlap and catch up with the site profile reviews and where we can handle all the generic issues, that seems to be more efficient.

Now certainly there's complications when the site review is months and months perhaps down the road and I don't know -- that would be up to the Board. The Board may want (unintelligible) sooner, which you know, we can -- we can certainly accommodate that, as well.

DR. H. BEHLING: But the truth out of -- this

is Hans. The truth -- this whole issue of having -- not having had a review of the site profile at a time close in (unintelligible) applied to other facilities, as well. So this is not a unique situation. In fact, we will probably address this before many of the other site profiles will even be looked at. So as far as I'm concerned, this is probably more properly addressed in the -- under task one, because it's not unique to the Savannah River issue at all.

MR. HINNEFELD: Right. And in fact, we've already made this decision with respect to Bethlehem Steel.

DR. H. BEHLING: Yeah.

MR. HINNEFELD: We made that decision early on that we would just defer those to Bethlehem Steel discussion.

So that takes care of high five, as well? Do you want to have some cursory discussion --

MR. GRIFFON: Yeah, I think we want to (unintelligible) high five anyway --

MR. HINNEFELD: Okay.

MR. GRIFFON: -- the same way, you know (unintelligible).

MR. HINNEFELD: Okay. This is issue number eight. This is the generic -- sometime -- I generally refer to it as the Savannah River high five generic issue. There's the description in OTIB-1, Technical Information Bulletin 1, which is a -- essentially an overestimate of intakes (unintelligible) estimating internal exposures for Savannah River for certain cases at Savannah River. The approach that was taken was to capture the catalog of highest intakes recorded at Savannah River since they've been cataloguing these exposures, and say what is -- let's presume that these -- this group of people or these -- group of claims that we're going to take this approach with, we're going to use this for claims that have either bioassay data that shows that they had very small, if any, intakes; or people who were not monitored and appropriately not monitored -- really looks like they were not monitored because they didn't need to be monitored. And let's say -- just let's -- we shouldn't necessarily say they had zero internal exposures and, you know, a relatively large internal exposure in these

cases won't -- won't carry the day. So why don't we invent a hypothetical large intake, assign it to this category of claims in order to be able to demonstrate that we have not shorted them on internal exposure just because we couldn't reproduce it from the bioassay record. We gave them quite a hefty internal exposure and still didn't carry the day on compensation (unintelligible). So that was the strategy behind doing this.

The intakes that were selected for -- for building this hypothetical intake were the highest -- highest five intakes for a series of radionuclides, and I don't even know how many there are sitting here today, that were used at Savannah River because Savannah River had catalogued their intakes for quite some time. They have a pretty extensive catalog of all the intakes they've had there.

So by taking this large number, we have this large hypothetical intake that, by all -- you know, the evidence tells us never occurred.

The method that Savannah River used to identify the intakes was to use the bioassay record of the employee, and from that bioassay record

deduce what intake that person received using the ICRP-30 models, which were the models that were applicable at the time and in fact still the models that guide the regulations in the country. So the -- those models have somewhat different excretion patterns associated with an intake than the newer ICRP-60 models that we utilize as part of this program, and therefore the -- the values of those intakes was questioned by SC&A reviewers since it was done with the prior ICRP guidance when we use ICRP-60. So the actual numerical value of the intake is being questioned, is it derived appropriately.

We've looked at this a lot and not -- you know, in terms of the -- there are some complicating factors here. Both the ICRP-30 and the ICRP-60 models have three solubility classes or absorption classes. In the current version they are called slow, medium and fast, so we can just refer to them that way. They have different designations in 30, but let's just think of them as the slow, medium and fast categories. And while they each have those three solubility categories, they don't -- the

slow in ICRP-30 doesn't behave exactly like the slow in ICRP-60. The medium in ICRP-30 doesn't behave exactly like the medium in ICRP-60 -- or whatever I said. So there -- because of that, the translation of one to the other in terms of the intake becomes a relatively complicated problem. And we've done a fair amount of analysis to try and decide how we appropriately analyze what Savannah River did and arrive at a good high five intake.

You know, on the face of it, for someone who's doing dose reconstructions and not trying to figure out the ins and outs of the ICRP models, what we have done is provided a large hypothetical intake that didn't happen and providing a large dose to these people who are -- for a part of this dose reconstruction that in many cases we have bioassay data that indicates they clearly didn't have that dose. And in fact in most cases, it's absolutely not credible for them to have those doses. So I guess my own approach is whether it's truly the average of the five largest intakes or whether it turns out to be the average of the eight largest intakes or some value slightly less

than that -- that average of the five highest intakes, it's still a huge intake that these people didn't get. And so the dose reconstruction approach appropriately bounds these people's internal dose, and so the outcome of the debate is -- from a dose reconstruction standpoint, is almost irrelevant, I just (unintelligible).
So having said that, though, we are interested in understanding the issue as fully as possible, and so I think Hans certainly understands it more than I do. I don't know if you're dying to say anything or not, Hans. The discussion will -- unfortunately, the discussion will necessarily become quite technical, I think --

MR. GRIFFON: I have a -- a -- I have a hypothetical resolution that might appease Joyce and -- and me, and that would be -- 'cause my concern is one step back, that did NIOSH or ORAU validate the high five --

MR. HINNEFELD: (Unintelligible)

MR. GRIFFON: -- and my impression is that you got the intakes from Savannah's database (unintelligible). I may be wrong about that,

but my impression was that you -- you took their numbers of intakes -- maybe you knew a little about the class or the compound and that sort of thing. You didn't take their urine data or whatever and recalculate intake (unintelligible) --

MR. HINNEFELD: No, (unintelligible) we -- we used intakes (unintelligible) by Savannah River.

MR. GRIFFON: So if -- if -- if you could go back that step and recalculate and just use the 60 models, then we'd -- everybody'd be happy. Joyce would have the models right and I would have my validation (unintelligible) you went back to the raw data and -- because I think -- you know, again, okay, those intake numbers are very high. What looks high in today's world may not have -- you know, who knows?

MR. HINNEFELD: May not have -- yeah.

MR. GRIFFON: Yeah, so it's worth -- it's worth stepping back and validating, and it gives the claimant the benefit that you did that step, you didn't just say -- 'cause we hear it all the time that -- that the claimants say we don't trust DOE's data. Well, no, we can step

back and look at the raw data. We recalculated this ourselves and so you -- you do that validation step, as well as you can recalculate it using the new model (unintelligible).

MS. K. BEHLING: This is Kathy Behling, and just to expand on that validation, the other thing I would be curious about as to whether those urinalysis were taken -- what reason they were given the urinalysis. Was it a routine or was it an investigation because of an incident. Because if those are high routine urinalysis that weren't -- and the previous one was taken one year before that and we don't know when that incident occurred that may have created that height -- you know, this high urinalysis, that becomes a significant issue.

MR. HINNEFELD: Well --

MR. GRIFFON: That's right.

MR. HINNEFELD: -- we didn't take the high bio- - highest bioassay data. It was -- they had estimated intake from a collection of bioassay data (unintelligible) --

MR. GRIFFON: I'm -- I'm -- (unintelligible).

MR. HINNEFELD: -- (unintelligible) intake value.

MS. K. BEHLING: Is that right?
MR. HINNEFELD: There was an intake value that (unintelligible) --
MR. GRIFFON: And I'm (unintelligible) --
MR. HINNEFELD: -- based on the (unintelligible) bioassay data.
DR. H. BEHLING: Stu and I already discussed this because the critical issue is that if you start out with the five highest urine values, you may not have the highest doses because if the dose was -- or if the exposure was received the day before as the result of a radiological incident, the urine data will clearly be high. But if it's a routine and you don't know when the intake was, even a modest presence of plutonium in urine, but if it was taken 180 days prior to this or whatever, would have a much higher intake, even though the urine level was lower than a high urine concentration that follows a radiologic incident that was assessed the day after.
MR. HINNEFELD: Right.
DR. H. BEHLING: So we have to be careful what does the high five represent.
MR. HINNEFELD: And it is the intakes, the high

five (unintelligible).

DR. H. BEHLING: And it should be intake. But now the question is what were the assumptions for the intake?

MR. GRIFFON: Right, (unintelligible) --

DR. H. BEHLING: How can you not (unintelligible) --

MR. GRIFFON: -- I know that may, I believe, (unintelligible) all those they probably have case write-ups on how they did those --

MR. HINNEFELD: Yeah, I (unintelligible).

MR. GRIFFON: Yeah.

MR. HINNEFELD: Now when you were talking about validation of the original data, how raw -- up-to-date are you looking for? I mean are you looking -- I mean there would be bioassay results in this first (unintelligible), but they would -- Savannah River probably has already provided or certainly we can get the actual bioassay results (unintelligible). Is that what you're thinking?

MR. GRIFFON: Yeah, I -- I guess that's open for discussion, you know, (unintelligible) --

MR. HINNEFELD: And it's not really for this group.

MR. GRIFFON: Right -- yeah, for the whole -- whole -- you know, but I -- I think at least starting off with their case write-ups and using their raw (unintelligible) raw data there, maybe not going back to laboratory log books and that (unintelligible).

MR. HINNEFELD: Right.

MR. GRIFFON: That would be a -- that may be hard to find.

MR. HINNEFELD: Okay.

MR. GRIFFON: Then that -- then that alleviates that -- that sort of guesswork of okay, I've got these intake numbers. How can -- how can -- what kind of corrections do I have to do to get (unintelligible) ICRP-60 -- you know --

MR. HINNEFELD: Right.

MR. GRIFFON: -- you plug in to that number, you may be quicker to go back and recalculate.

MR. HINNEFELD: Yeah.

MR. TOMES: This is Tom Tomes. I have, just in the course of reviewing claims, ran across and matched up an intake that (unintelligible) high five (unintelligible) I just coincidentally ran across one with the claimant. I didn't evaluate him but -- but as far as evaluation of

the intake that we assigned, there was an evaluation done and quite complicated in terms of -- to -- to determine what the effect of -- of (unintelligible) models, you know, between the two -- ICRP-30 and ICRP (unintelligible) models and that was evaluated and determined to be that the -- that the -- for most of these (unintelligible) it would be a -- would be a lower intake, which (unintelligible) --

MR. GRIFFON: Yeah, I don't (unintelligible) --

MR. TOMES: -- that -- that -- that would be more -- not conservative or not -- be more -- be more favorable by (unintelligible) exact evaluation, that's just -- but the numbers are in the TIB that actually show various (unintelligible) what your ratio of -- of a dose to be -- or intake to be.

MR. GRIFFON: And -- and you know, I -- I guess my issue's a little bit separate because regardless of the outcome, I think that that (unintelligible) of going back and validating that (unintelligible) that they were, you know -- I mean you may look at the write-up and -- and say oh, I don't agree with their approach. You may get a higher intake even though you use

-- particular model, you know, (unintelligible) independently to check those intakes is a (unintelligible) --

THE COURT REPORTER: I can't hear you.

MR. GRIFFON: -- model or the wrong model.

MR. HINNEFELD: Okay. So can we conclude with our decision that this will be addressed more fully in the Savannah River profile review?

MR. TOMES: Yeah, I -- and in fact it is being addressed so I would just urge that we (unintelligible) there.

MR. HINNEFELD: Okay.

MR. TOMES: Same thing for the next one, the question of how incidences are addressed (unintelligible) site profile is looking at -- these generic issues are being addressed in the --

MR. HINNEFELD: Okay. Now as I understand this, these incidents described here were actually in the DOE response that -- these were things that were in the record for this person, a tritium exposure incident and a relatively high tritium bioassay sample.

MR. TOMES: Okay, you're right, this is sort of a dual issue. This is appropriate for this in

terms of the representation (unintelligible) the generic issue.

MR. HINNEFELD: So there was a -- you know, there were some incident report type information provided on this case.

MR. TOMES: Right. This is individual as well as a generic question.

MR. HINNEFELD: Okay. Anybody want any additional discussion on number nine? We started talking about nine a little bit on the (unintelligible) issue. We -- there are a number of -- like I said -- incident type information provided by the DOE with the expos- - with the response on this, and we have a little -- we provide a particular description of how, in the dose reconstruction, has bracketed the doses (unintelligible) dose incident.

DR. H. BEHLING: Stuart, just for the audience here, let me give you the next slide here, which is 12.3, and -- and you see, for those who are close enough, the bullets that were identified as issues here. And at the bottom -- and I'll just read it. At the very bottom I state that SC&A has not evaluated the

significance of these data and it is uncertain whether radiological incident records of this claim-- for this claimant are complete. As a result, SC&A is uncertain whether NIOSH's stated assumptions and decisions are correct, scientifically valid or claimant favorable. Well, in light of the assignment of hypothetical doses against those, I did do a back-of-the-envelope calculation and in each case concurred that the -- the hypothetical intakes exceed what might have been the potential exposure as a result of these incidents, with the exception of the high five issue that is a separate issue.

MR. HINNEFELD: The one that's (unintelligible) --

DR. H. BEHLING: As far as I'm concerned -- you know, at the time when I -- when I had to write this, I didn't have the luxury of going back and analyzing what was assigned in regard to accommodating these radiologic incidents, but I have since then looked at them -- looked at these, sort of did a back-of-the-envelope calculation and concluded that your bases are covered by hypothetically (unintelligible).

MR. HINNEFELD: Okay.

MR. GRIFFON: I guess for me the other exception is the eight -- eight lost or -- or damaged badges. (Unintelligible) I look back at 37 percent. I know with the high five you give them a lot of benefit of the doubt, but is that close enough to chase those down a little more? I don't know, I --

MR. HINNEFELD: Well, I think we can certainly pull up to what they say --

MR. GRIFFON: Right, right (unintelligible) check on that.

MR. GIBSON: (Unintelligible) high five get to sit in a truck and drink beer on company pay for weeks at a time like they did at Mound?

MR. HINNEFELD: Oh, I don't know. I don't know.

(Pause)

MR. HINNEFELD: Okay, are we ready for 13 --

MS. MUNN: Yes.

MR. HINNEFELD: -- case #13? All right.

PRESENTATION/DISCUSSION OF ISSUES FOR CASE #13

DR. H. BEHLING: Okay. Case #13 is our last of the Savannah River Site claims. The individual here was only employed very briefly between --

well, I won't mention even the -- the month. It was in , but the time frame covers less than The person was engaged in at a site in the . He developed prostate cancer in and based on the assigned dose of 3.96 rem he received a probability of causation value of 3.19 percent, so low, non-compensable claim.

MR. HINNEFELD: The first issue -- or the first two issues are the generic issues we just discussed, Savannah River high five and the organically-bound tritium issue.

And then the third, and the only one that -- which we wanted to comment on was the comment by the dose reconstructor that the items or comments made in the interview -- claimant interview were not addressed. And I think this probably fits in the category that we talked about earlier, that the claimant is entitled to understand that the information they provided is -- has been evaluated and utilized in the dose reconstruction. We have prepared a little response. The specific items involved were two very short duration incidents. This case was

given the Savannah River high five hypothetical intake, so the dose reconstruction's solid -- is a solid case, but we agree that the claimants are entitled to a description of how the information provided (unintelligible).

DR. H. BEHLING: There's no comment. I had, in my write-up, said that based on the nature of the radiologic incidents and the worker's claim that no investigation or bioassays were performed for either incident, the potential exists for internal exposures which were not accounted for specifically. However, SC&A also does acknowledge that the NIOSH-assigned hypothetical internal doses for tritium and other nuclides are likely to be significantly greater than those that may have resulted from these incidents. So we didn't consider the issue, we just stated that the -- the radiological incidents, in themselves, were not necessary (unintelligible), but given the hypothetical intake and the doses assigned, the likelihood is that he was assigned a much larger dose than would have been the case had these incidents been investigated.

So that's it for --

MR. HINNEFELD: Completes our plan for the day. Right?

MR. GRIFFON: Yeah.

DR. H. BEHLING: So we can start tomorrow with case #16, and are we in agreement that we will start as early as 8:30? I haven't heard affirmative from -- from Wanda.

MS. MUNN: You've only heard moans from Wanda.

DR. H. BEHLING: If we hear any snoring, Wanda, we'll wake you up.

MS. MUNN: 8:30 is fine.

DR. H. BEHLING: Okay. So we'll close for the night and we'll try again, and hopefully tomorrow's telephone connections won't have as many problems as we did today.

MS. K. BEHLING: And use these telephone numbers to call in tomorrow again.

MS. MUNN: All right.

DR. H. BEHLING: Okay. Well, have a good night and we'll talk to you in the morning.

MS. MUNN: Thank you.

(Whereupon, the teleconference adjourned at 5:15 p.m.)